

**Supplementary Table S3: Centromere and neocentromere calls with Centurion algorithm**

Centromere	Genomic start	Genomic stop	WT Centurion Library		YJB10777 Centurion Library		YJB10780 Centurion Library	
			Centurion call (WT)	Distance from Centurion call to CEN edge (WT)	Centurion call (neocen 4.5kb)	Distance from Centurion call to CEN edge (neocen 4.5kb)	Centurion call (neocen 166kb)	Distance from Centurion call to CEN edge (neocen 166kb)
<i>CEN1</i>	1562983	1565911	1564249	0	1564347	0	1563273	0
<i>CEN2</i>	1927141	1930100	1930097	0	1928709	0	1929645	0
<i>CEN3</i>	823238	826384	826605	221	824388	0	825641	0
<i>CEN4</i>	992531	996168	995997	0	994837	0	994630	0
<i>CEN5</i>	468726	471753	471356	0	5000	0	170292	0
<i>CEN6</i>	979972	983725	978028	1944	979794	178	979923	49
<i>CEN7</i>	425811	428711	427642	0	427527	0	427813	0
<i>CENR</i>	1743086	1747562	1743871	0	1744538	0	1743166	0